

# **Cambridge Electric Light Company**

## **Annual Service Quality Report**

### **SECTION ONE**

Year Ending December 31, 2004

**DTE FORM - B**



## FORM B (Electric Companies)

### Cambridge Electric Light Company

PENALTY PROVISIONS	Years in Database	Mean and Benchmark	Performance in 2004	Comments
Telephone Answering Factor (%)	7	69.13% (+/- 8.37%)	78.55%	Telephone statistic based on Calls Handled within 30 Seconds.
Emergency Answering (%)	2	NA	85.26%	Tracking emergency calls started in 2002.
Non-Emergency Answering (%)	2	NA	77.40%	Tracking non-emergency calls started in 2002.
Service Appointments Kept (%)	2	NA	78.79%	Tracking service appointments started in 2002.
Meter Reads (%)	7	98.46% (+/- 0.46%)	98.28%	
Consumer Division Cases (Cases/1000 customers)	10	0.241 (+/- 0.137)	0.250	
Bill Adjustments (\$/1000 customers)	10	\$7.47 (+/- \$9.03)	\$0.00	
SAIFI	5	0.645 (+/- 0.129)	0.621	
SAIDI	5	48.74 (+/- 14.31)	49.29	
Lost Time Accident Rate (# of acc/200,000 employee hours worked)	10	2.63 (+/- 0.80)	0.74	

## FORM B (Electric Companies)

### Cambridge Electric Light Company

ADDITIONAL REPORTING	Years in Database	Mean and Benchmark	Performance in 2004	Comments
Staffing Levels	8	Union 104 Management 38	Union 2128 Management 847	
Restricted Work Day Rate (# of acc/200,000 employee hours worked)	10	2.28	1.19	Based on most recent 10 years
Property Damage > \$50K (#)	2	NA	0	
Line Loss	10	2.6%	2.5%	Performance in 2004 is estimated pending filing of FERC FORM 1
Capital Expenditures (# of projects and total \$)	10	\$7,448,000	\$23,295,000	
Spare Component & Inventory Policy	NA	NA	NA	
Customer Surveys (scale 1-7):				
Random (Overall Customer Satisfaction Survey)	2	NA	82.7%	
Callers (Post-Transaction Survey)	2	NA	82.7%	
Customer Service Guarantees (#; total \$)				
# of Payouts	3	NA	4	
\$ of Payouts	3	NA	\$100	

# **Cambridge Electric Light Company**

## **Annual Service Quality Plan Performance Report**

### **SECTION TWO**

Year Ending December 31, 2004

Historical Performance Data



## **SECTION 2**

### **Cambridge Electric Light Company Performance Review for Year Ending December 31, 2004**

#### **I. Introduction**

On December 5, 2001, the Department of Telecommunications and Energy (the “Department”) approved a Service Quality Plan (the “SQ Plan”) for Cambridge Electric Light Company d/b/a/ NSTAR Electric (“Cambridge,” or the “Company”). In accordance with the terms of the SQ Plan, Cambridge filed its first annual service-quality report on March 1, 2002. That filing established the benchmarks (using data through 2001) against which performance in the 2002 calendar-year period would be measured. In this section (Section 2) of the filing, the Company reviews: (1) the historical data underlying those benchmarks; (2) the performance results for 2004; and (3) the comparison of 2004 performance results to the established benchmarks. Items (2) and (3) are provided in this section at Schedule 1, at page 1. Item (1) is provided in Schedule 1, at page 2.

In Section 3 of this filing, the Company has provided documentation for the reliability and safety requirements that are subject to the reporting requirements of the SQ Plan.

Also in Section 3, the Company has provided updated historical performance data through December 31, 2004. Based on this data, the Company has calculated the benchmarks that will be applied to evaluate 2005 performance data in next year’s filing. In that regard, the Company has recalculated benchmarks for three measures for which there was less than the requisite level of data as of December 31, 2001. For these three measures, the benchmarks applied next year are calculated using data through December 31, 2004. As provided by the SQ Plan, benchmarks that were calculated using the requisite level of data as of December 31, 2001, are fixed for the period of the SQ Plan. The fixed and updated benchmarks for 2005 are set forth in Appendix 12.

Specifically Section 3 contains the following:

- Appendix 1: Customer Surveys
- Appendix 2: Customer Average Interruption Duration Index
- Appendix 3: Restricted Work Day Data
- Appendix 4: Annual Line Loss Data
- Appendix 5: Damage to Company Property In Excess of \$50,000
- Appendix 6: Excludable Major Events
- Appendix 7: Tree Pruning Policy

- Appendix 8: Capital Expenditures
- Appendix 9: Spare Component and Acquisition Inventory Policy
- Appendix 10: Poor Performing Circuits
- Appendix 11: Staffing Levels
- Appendix 12: Updated Historical Data and Calculation of Benchmarks for 2005 Performance

## **II. Performance Review for Year Ending December 31, 2004**

### **A. Customer Service and Billing Performance Measures**

#### **1. Telephone Service Factor**

For the Telephone Service Factor, the Company is required to track and report data on the percentage of telephone calls from customers that are handled within a 30-second time interval, including both emergency and non-emergency calls.<sup>1</sup> Cambridge began collecting data based on the percentage of calls answered within 30 seconds in 1997. Based on available data through 2003, the Company's benchmark for this measure is 69.13 percent. In 2004, the Company handled 78.55 percent of calls within 30 seconds, which generated an offset for the Company.

Because the 2004 performance benchmark calculated for the Telephone Service Factor was based on less than ten years of historical data, the Company has updated this benchmark to include 2004 performance. As shown in Appendix 12, the benchmark against which 2005 performance will be measured has increased from 69.13 percent to 70.31 percent.

#### **2. Service Appointments Met as Scheduled**

As of January 1, 2002, the Company instituted a system to compile statistics on the percentage of service appointments met by Company personnel, excluding appointments missed by the customer. A "service appointment" is defined as a mutually agreed upon arrangement for service between the customer and the Company where the arrangement specifies the date for the Company's personnel to perform a service activity that requires the presence of the customer at the time of the service. The Company will continue to update the data annually in accordance with the Department's guidelines, and will establish the benchmark when three years of data become available. As detailed in Appendix 12, the Company met 78.79 percent of its service appointments as scheduled in 2004. Because this completes three years of data the benchmark against which 2005 performance will be measured has been calculated and is 87.28 percent as shown in Appendix 12.

---

<sup>1</sup> In accordance with the Department's directives, effective January 1, 2002, the Company began to measure the percent of calls handled within a 20-second time interval. For this performance measure, the Company handled 74.76 percent of calls within 20 seconds during 2004.

### 3. On-Cycle Meter Readings

Cambridge is required to report on the percentage of meters that are actually read by the Company in accordance with the meter-reading cycle. Based on available data through 2003, the Company's benchmark for this measure is 98.46 percent. In 2004, the Company achieved 98.28 percent of on-cycle meter reads, which is within one standard deviation of the benchmark.

Because the 2004 performance benchmark calculated for On-Cycle Meter Readings was based on less than ten years of historical data, the Company has updated this benchmark to include 2004 performance. As shown in Appendix 12, the benchmark against which 2005 performance will be measured has changed from 98.46 percent to 98.44 percent.

### B. Customer Satisfaction Performance Measures

#### 1. Consumer Division Cases

The Company is required to measure its performance in relation to the number of customer-complaint cases filed with the Department's Consumer Division. Based on the 10 years of data provided to the Company, the performance benchmark shown on Schedule 1 is 0.241, which will remain fixed for the duration of the service-quality plan. In 2004, the number of Consumer Division cases was 0.250, which is within one standard deviation of the benchmark.<sup>2</sup>

#### 2. Billing Adjustments

The Company is required to measure its performance in relation to the amount of revenue adjustments that result from the Department's intervention in a billing dispute with a residential customer. This is based on data that is compiled and reported by the Department and then provided to the Company. Based on the 10 years of data provided to the Company, the performance benchmark shown on Schedule 1 is \$7.47, which will remain fixed for the duration of the SQ Plan. In 2004, the number of Billing Adjustments was \$0.00 which is within one standard deviation of the benchmark.

### C. Safety and Reliability Performance Measures

#### 1. System Average Interruption Duration Index ("SAIDI") and System Average Interruption Frequency ("SAIFI")

The SQ Plan requires the Company to track and report SAIDI/SAIFI statistics and to base the benchmark for this measure on the most recent five years of data prior to the start of the Company's SQ Plan. Under the SQ Plan, SAIDI and SAIFI are calculated

---

<sup>2</sup> In applying the Department's penalty/offset formulae to the Company's performance data, the Company has determined that, in some instances, the maximum amount of offsets cannot be achieved. For example, the Company's 2004 SQ Report demonstrates that its benchmark for consumer division cases is set at 0.241 cases per 1,000 customers. However, because of a wide deadband of 0.137 cases per 1,000 customers, a maximum offset may result in 2006 for 2005 performance only if the Company has (-0.034) cases per 1,000 customers, which is impossible.

with the exclusion of “Excludable Major Events.” One criterion for an Excludable Major Event is that it be an unplanned interruption of service to 15 percent or more of the Company’s customers in an “operating area.” The Department has defined “operating area” to mean the Company’s entire service territory. The Company’s historical SAIDI/SAIFI statistics are based on the exclusion of major events defined as events that affected a significant number of customers on a service-area basis (rather than a company-wide basis). Schedule 1 shows the SAIDI/SAIFI performance benchmarks that were fixed for the duration of the SQ Plan based on the most recent five-years of historical data prior to the start of the Company’s SQ Plan (1997-2001), excluding major events as defined on the historical “service-area” basis. As shown in Schedule 1, the SAIDI benchmark is 48.74 and the SAIFI benchmark is 0.645. In 2004, the Company’s performance statistics were 49.29 for SAIDI and 0.621 for SAIFI, resulting in performance within one standard deviation of the benchmark for SAIDI and SAIFI.

## 2. Lost-Work Time Accident Rate

The SQ Plan requires the Company to report on the Incidence Rate of Lost Work Time Injuries and Illness per 200,000 Employee Hours, as defined by the U.S. Department of Labor Bureau of Labor Statistics. This data is compiled and reported annually to the U.S. Department of Labor Bureau of Labor Statistics and the Company has 10 years of available data for this measure. Based on that data, the performance benchmark for this measure is 2.63. In 2004, the number of Lost Work Time Accidents was 0.74, which generated an offset for the Company.<sup>3</sup>

---

<sup>3</sup> On January 1, 2002, the U.S. Department of Labor, Occupational Safety and Health Administration (“OSHA”), revised the regulations concerning the recording and reporting requirements for occupational injuries and illnesses. See 29 CFR § 1904.7. Specifically, the revised regulations require the Company to include the number of calendar days that an employee was unable to work as a result of injury, regardless of whether or not the employee was scheduled to work on those days (29 CFR § 1904.7(iv)). The Company’s performance benchmark for Lost-Work Time Accident Rate, which is based on ten years of historical information, excludes weekends, holidays or other days that an employee would not normally have reported to work. Since the effective date of OSHA’s regulations, the Company has maintained a log of occupational injuries or illnesses consistent with the new regulations. However, for purposes of the annual service-quality report (the “SQ Report”), the Company has tracked and reported its performance consistent with the prior version of the regulation so that the performance data will match the historical data composing the performance benchmark. The Department approved the Company’s 2002 SQ Report using this methodology. See 2002 Service Quality Reports for Electric Distribution and Local Gas Distribution Companies, D.T.E. 03-10 through D.T.E. 03-23 (2003).

CAMBRIDGE ELECTRIC LIGHT COMPANY SERVICE QUALITY STANDARDS										
<u>Measures</u>	<u>Required</u> <u>Years</u> <u>History</u>	<u>Actual</u> <u>Years</u> <u>Available</u>	<u>Historical</u> <u>Average(1)</u>	<u>Std Dev</u>	<u>Penalty /</u> <u>Offset</u> <u>Weight</u>	<u>Max (3)</u> <u>Penalty</u>	<u>Results - 2004</u>			
							<u>Observ.</u>	<u>Variance</u>	<u>No. of</u> <u>Std Devs</u>	<u>Penalty /</u> <u>(Offset)</u>
<u>Customer Service and Billing</u>										
% Calls Answered (2)	10	7	69.13%	8.37%	12.5%	\$ 104,387	78.55%	9.42%	1.1254	(33,052)
% Services Appointments Met	10	2	NA	NA	12.5%	104,387	78.79%	NA	NA	NA
% On-Cycle Meter Reads	10	7	98.46%	0.46%	10.0%	83,509	98.28%	-0.18%	-0.3913	0
<u>Safety and Reliability</u>										
Lost Work Day Accidents	10	10	2.63	0.80	10.0%	83,509	0.74	-1.89	-2.3625	(83,509)
SAIDI - 5 yrs	5	5	48.74	14.31	22.5%	187,896	49.29	0.55	0.0384	0
SAIFI - 5 yrs	5	5	0.645	0.129	22.5%	187,896	0.621	-0.024	-0.1860	0
<u>Consumer Division Statistics</u>										
Consumer Division Cases	10	10	0.241	0.137	5.0%	41,755	0.250	0.009	0.0657	0
Billing Adjustments	10	10	7.47	9.03	5.0%	41,755	0.00	-7.47	-0.8272	0
<b>Total</b>					<b>100.0%</b>	<b>\$ 835,093</b>				<b>\$ (116,561)</b>
<u>Notes</u>										
(1) Reflects DTE measures, benchmark method and penalty/incentive mechanism.										
(2) Telephone statistic based on Calls Handled within 30 Seconds; includes calls abandoned after threshold.										
(3) Max penalty is incurred at 2 sd from average										
(4) Two percent of total T&D revenue in 2004										
Less: Service Guarantee Payout						\$835,193				
Maximum Penalty / (Offset)						100				
						<u>\$835,093</u>				



**CAMBRIDGE ELECTRIC LIGHT COMPANY**

Measures	History (1)																		
	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	Sample	Average	Std Dev
<u>Customer Service and Billing</u>																			
% Calls Answered (1)	80.28%	80.24%	60.26%	71.16%	61.55%	64.26%	66.17%										7	69.13%	8.37%
% Services Appointments Met	83.06%	100.00%															2	NA	NA
% On-Cycle Meter Reads	98.29%	98.09%	98.64%	98.87%	98.64%	97.69%	99.00%										7	98.46%	0.46%
<u>Safety and Reliability</u>																			
Lost Work Day Accidents			1.54	2.49	2.89	1.43	2.35	3.24	2.81	3.84	3.58	2.17					10	2.63	0.80
SAIDI - 5 yrs			37.26	37.17	40.72	66.2	62.33										5	48.74	14.31
SAIFI - 5 yrs			0.659	0.498	0.815	0.712	0.540										5	0.645	0.129
<u>Consumer Division Statistics</u>																			
Consumer Division Cases			0.126	0.176	0.569	0.207	0.158	0.320	0.133	0.212	0.159	0.347					10	0.241	0.137
Billing Adjustments			0.00	11.17	3.41	1.70	23.47	11.04	21.79	0.00	2.09	0.00					10	7.47	9.03

**Notes**

(1) 12 Month period January to December.

(2) Telephone statistic based on Calls Handled within 30 Seconds; includes calls abandoned after threshold.

# **Cambridge Electric Light Company**

## **Annual Service Quality Report**

### **SECTION THREE**

Year Ending December 31, 2004

Back-up Data and Supporting Schedules



## **SECTION 3**

### **I. Non-Penalty Related Service Quality Information**

Section VIII of the SQ Plan sets forth a number of non-penalty related reporting requirements for the Company's annual service-quality filings. These reports are as follows:

#### **Appendix 1: Customer Surveys**

Pursuant to section III.C of the SQ Plan, Cambridge conducted an annual survey of (1) overall customer satisfaction as indicated by a statistically representative sample of residential customers, and (2) post-transaction customer satisfaction as indicated by a sample of randomly selected customers who have contacted the Company's customer-service department during the year. The surveys were conducted by Research International, which is an independent research firm with significant experience in conducting customer satisfaction surveys. Consistent with historical practice the customer surveys for Cambridge Electric are conducted in combination with those of the Commonwealth Electric Company. The results of these surveys are presented in Appendix 1.

#### **Appendix 2: Customer Average Interruption Duration Index ("CAIDI")**

The CAIDI performance statistics for the ten most recent years ending December 31, 2004 are provided in Appendix 2. Historically, the Company's CAIDI performance statistics have been calculated on the same basis as SAIDI and SAIFI. As a result, the CAIDI performance statistics for Cambridge are based on a calculation that excludes major events that occur on a service-area basis (rather than a company-wide basis), as discussed above in relation to the SAIDI/SAIFI benchmarks.

In addition, it should be noted that, under the provisions of the SQ Plan, when customers lose power as a result of the process of restoring, the duration of these additional outages is included in SAIDI, but the additional number of interruptions is excluded from the calculation of SAIFI. See, Section V(I). Further, under Section I(B), CAIDI is calculated as SAIDI divided by SAIFI. A consequence of this construction is that, in calculating CAIDI, the numerator and the denominator are not representing the same outages i.e., there are outages that are included in the numerator, but not in the denominator. To be consistent with industry practice, the numerator and the denominator of the CAIDI calculation should represent the same outages.<sup>1</sup>

#### **Appendix 3: Restricted Work Day Rate**

The Restricted Work Day Rate is the Incidence Rate of Restricted Work Cases Per 200,000 Employee Hours, as defined by the U.S. Department of Labor, Bureau of

---

<sup>1</sup> The Company's CAIDI statistic for 2004 would be 56.96 with the outages associated with power restoration excluded from SAIDI.

Labor Statistics. This information is provided for the most recent ten years in Appendix 3.

**Appendix 4: Electric Distribution Line Loss**

Pursuant to section VIII.A of the SQ Plan, the Company is required to report electric distribution line loss on an annual basis. For 2004, this information is provided in Appendix 4. The annual line loss value for electric companies is the net result of reconciling the total sources of power to the amount of electricity supplied to customers, plus company use. The derivation of the calculation is set forth on page 401a of the Company's annual FERC Form 1.

**Appendix 5: Damage to Company Property In Excess of \$50,000**

Pursuant to section VIII.A of the SQ Plan, the Company is required to provide an annual report of property-damage incidents involving property damage to Company-owned facilities exceeding \$50,000 per incident. For 2004, there were no such incidents.

**Appendix 6: Excludable Major Events**

Pursuant to section VIII.D of the SQ Plan, the Company is required to identify and report on an annual basis the outages that are considered Excludable Major Events in the calculation of SAIDI/SAIFI statistics. Information for 2004 is provided in Appendix 6.

**Appendix 7: Tree Pruning Policy**

The Company's Tree-Pruning Policy is provided as Appendix 7.

**Appendix 8: Capital Expenditures**

The Company's data on capital expenditures for the ten most recent years (1995 through 2004) is provided in Appendix 8.

**Appendix 9: Spare Component and Acquisition Inventory Policy**

Pursuant to section VIII.F of the SQ Plan, Cambridge is required to report on an annual basis its policy for identifying, acquiring, and stocking critical spare components for its distribution and transmission system. The Spare Component and Acquisition Inventory Policy is provided as Appendix 9.

**Appendix 10: Poor Performing Circuits**

Pursuant to section VIII.G of the SQ Plan, Cambridge is required to identify and report on an annual basis its poor performing circuits. For 2004, the Company's information is provided as Appendix 10. Poor performing circuits are any distribution feeder that:

- (a) has sustained a circuit SAIDI or SAIFI value for a reporting year that is among the highest (worst) ten percent of that utility's feeders for any two consecutive reporting years; or
- (b) has sustained a circuit SAIDI or SAIFI value for a reporting year that is more than 300 percent greater than the system average of all feeders in any two consecutive reporting years.

#### **Appendix 11: Staffing Levels**

Staffing level information for the Company is provided in Appendix 11.

#### **Appendix 12: Performance Benchmarks for 2004**

In Appendix 12, the Company has updated historical data to include 2004 performance data in the calculation of benchmarks for the 2005 reporting period, where the benchmarks were not fixed for the duration of the SQ Plan.

### **II. Customer Service Guarantees**

Pursuant to section XI of the SQ Plan, Cambridge is required to provide information as to the customer payments credited as a result of the customer-service guarantee program during the service-measurement period. As indicated in the SQ Plan, Cambridge credits the customer's account by \$25.00 if a meter reading is inaccurate, if the Company knowingly fails to inform a customer that it will be more than 30 minutes late for a service appointment, if there is an error in the direct payment or pay-by-phone billing systems, if the Company fails to inform a customer of a scheduled service interruption, or if the Company does not respond to a billing question by the next business day. In addition, if a new residential service line is not connected by the agreed date (after all permits are received), the first month's bill is free (minimum \$25, maximum \$100). In 2004, Cambridge remitted to customers a total of \$100.00 under its Customer-Service Guarantee program.

### **III. Conclusion**

As set forth above, this filing establishes the performance benchmarks for service-quality measures subject to the penalty mechanism based on historical data available through December 31, 2004. On March 1, 2006, Cambridge will make its annual filing, which will compare the Company's performance in 2005 to the benchmarks established in this filing. The Company's March 2006 filing will also include documentation to satisfy all other reporting requirements set forth in the approved SQ Plan.

# Cambridge Electric Light Company

## Customer Surveys

Year Ending December 31, 2004



Appendix 1

# RESEARCH INTERNATIONAL



## MEMO

TO NSTAR  
FROM Research International  
DATE February 4, 2005

RE: Residential customer satisfaction metrics (former COM/Electric service area)

The following results are from a representative sample of 800 NSTAR residential customers. Of the 800 surveys, 550 were with NSTAR Electric residential customers (300 in the former Boston Edison service area, and 250 in the former COM/Electric service area) and 250 with NSTAR Gas residential customers.

Respondents were asked to evaluate their *satisfaction with the service they are receiving from NSTAR Electric* using a 7-point scale, where a rating of "7" means "very satisfied." The data from NSTAR Electric customers are weighted to reflect the true proportion of former Boston Edison customers to former COM/Electric customers. *"Don't know" responses are excluded from the analysis.*

- Eight in ten (82.7%), or 206 of 249 NSTAR Electric customers living in the former COM/Electric service area rate positively their overall satisfaction with NSTAR (5 or higher on 7-point scale).

The raw numbers in terms of actual customer responses to the 7-point scale in 2004 are as follows:

Response codes	"1"	"2"	"3"	"4"	"5"	"6"	"7"	"DK"
Responses	4	4	11	24	57	52	97	1

The associated margin of error for the sample of 250 surveys is +/-6.2 percentage points at the midpoint of the 95% confidence level.

Mary I. Burns  
Client Services Director  
Research International/Stamford  
203-358-0900  
3 Landmark Square  
Stamford, CT 06901

# RESEARCH INTERNATIONAL



## MEMO

TO NSTAR  
FROM Research International  
DATE February 4, 2005

RE: Post-transaction residential customer satisfaction metrics (former COM/Electric service area)

The following results are from a representative sample of 900 NSTAR residential customers who recently contacted NSTAR for service. Of the 900 surveys, 720 were with NSTAR Electric residential customers (457 in the former Boston Edison service area, and 263 in the former COM/Electric service area) and 180 with NSTAR Gas residential customers.

Respondents were asked to think about the most recent time they called NSTAR and to evaluate their *overall satisfaction with the service they received from the customer service department of NSTAR* using a 7-point scale, where a rating of "7" means "very satisfied." *"Don't know" responses are excluded from the analysis.*

- More than eight in ten (82.7%), or 215 of 260 NSTAR Electric customers living in the former COM/Electric service area rate positively their overall satisfaction with NSTAR's customer service (5 or higher on 7-point scale).

The raw numbers in terms of actual customer responses to the 7-point scale in 2004 are as follows:

Response codes	"1"	"2"	"3"	"4"	"5"	"6"	"7"	"DK"
Responses	12	9	15	9	26	45	144	3

The associated margin of error for the overall sample of 263 surveys is +/-6.0 percentage points at the midpoint of the 95% confidence level.

Mary I. Burns  
Client Services Director  
Research International/Stamford  
203-358-0900  
3 Landmark Square  
Stamford, CT 06901



# **Cambridge Electric Light Company**

## **Customer Average Interruption Duration Index**

### **CAIDI**

Year Ending December 31, 2004



Appendix 2

Cambridge Electric Light Company  
SQ Plan  
Historical Data

<u>Year</u>	<u>SAIFI</u>	<u>CAIDI</u>	<u>SAIDI</u>
1995	0.604	110.54	66.76
1996	0.717	73.55	52.77
1997	0.540	115.33	62.33
1998	0.712	93.01	66.20
1999	0.815	49.97	40.72
2000	0.498	74.64	37.17
2001	0.659	56.54	37.26
2002	0.697	94.78	66.10
2003	0.456	105.66	48.18
2004	0.621	79.35	49.29

Excludes outages affecting greater than 15% of Company's service territory.

# **Cambridge Electric Light Company**

## **Restricted Work Day Data**

Year Ending December 31, 2004



Appendix 3

# Injury Statistics

## Restricted Duty Cases

Commonwealth Electric and Cambridge Electric Companies

	<u>Hrs. Wkd.</u>	<u># of Cases</u>	<u>Rate</u>
1995	2,133,823	28	2.62
1996	2,097,821	17	1.62
1997	1,959,178	18	1.84
1998	1,821,364	18	1.98
1999	1,520,970	19	2.50
2000	1,363,403	18	2.64
2001	1,301,082	21	3.23
2002	1,666,906	23	2.72
2003	1,576,555	19	2.47
2004	1,515,397	9	1.19
		Mean	2.28

Incident Rate = Number of Cases x 200,000/Hours Worked

# **Cambridge Electric Light Company**

## **Annual Line Loss Data**

Year Ending December 31, 2004



Appendix 4

<p>Annual Line Loss Data Cambridge Electric Company</p>	
1995	2.4%
1996	2.7%
1997	2.2%
1998	2.4%
1999	1.6%
2000	2.5%
2001	3.1%
2002	4.1%
2003	2.8%
2004**	2.5%

1995	2.4%
1996	2.7%
1997	2.2%
1998	2.4%
1999	1.6%
2000	2.5%
2001	3.1%
2002	4.1%
2003	2.8%
2004**	2.5%

\*\* Subject to finalization of FERC FORM1 1 and DTE Annual Report for year-end 2004.

# **Cambridge Electric Light Company**

## **Damage to Company Property**

Year Ending December 31, 2004



Appendix 5

## **Cambridge Electric Company**

Damage to Company Property in Excess of \$50,000

- None



# **Cambridge Electric Light Company**

## **Excludable Major Event**

Year Ending December 31, 2004



Appendix 6

## 2004 Major Outage Events

### Cambridge Electric Light Company

Service Area	Event / Date	Customers Affected	Customers without service at periodic intervals	Longest Customer Interruption	Crews used to restore service
Cambridge Electric Light Company	Station 850 - May 3, 2004	15,016	19 min. – 16 21 min. – 11,000 58 min. – 4,000	58 minutes	3 crews (5/03)

# Cambridge Electric Light Company

## Tree Pruning Policy

Year Ending December 31, 2004



Appendix 7

# **NSTAR DISTRIBUTION TREE PRUNING POLICY**

## **General**

The Distribution Pruning Policy is intended to provide pruning contractors with guidelines for performing work acceptable to the NSTAR Company, including proper pruning techniques, work progress reporting and time reporting.

The Policy also documents general management procedures for dealing with the various aspects of Pruning Program Control.

The Policy pertains to both maintenance pruning, which is done on an ongoing cyclic basis of approximately three to six years and to “new work” pruning.

Note: Company representative or delegate as referred to in this policy shall be understood to mean those individuals normally assigned to monitor tree crew activities in a given district or area within a district.

## **Guidelines For Tree Pruning And Removal**

- 1** Provisions of the latest revisions to ANSI A-300 American National Standard for Tree Care Operations – Tree Shrub and Other Woody Plant Maintenance – Standard Practices shall be followed.
- 2** The desired amount of clearance necessary for conductors and electrical equipment should be such that high winds, rain, heavy snow, ice or a combination of any of them will not cause limbs or trees to come in contact with wires or other equipment. Effort should be made to remove any dead trees or limbs that in the event of their falling could contact conductors.
  - a** Clearance Guidelines – Refer to Exhibit 1.
  - b** Road Screens – Where existing, shall be reduced depending on the ground clearance of the conductors above, using the drop crotch or “Natural Pruning” technique as shown in Exhibit 1.
- 3** Generally Accepted Scientific Arboricultural Principles as Applied to line Clearance Work – For safe and healthy trees, the following recommendations are suggested:
  - a** Branches growing into a conductor should be removed by cutting back at a lateral or main side branch, rather than stub cutting. (“Natural Pruning”)
  - b** All cuts shall be properly made, using undercutting to avoid damage by loosening or stripping of bark; the so-called “Branch Bark Collar” shall be left intact but no stubs shall remain. Cuts shall be smooth to allow for callus tissue to form and to retard decay. Properly made saw cuts at the laterals, where the lateral is at least one third (1/3) the size of the branch or leader removed, reduce the number and vigor of re-growth sprouts through the trees natural growth mechanisms. (“Natural Pruning”).

- c In general, tree paint is not required. In specific instances state or municipal authorities may require tree paint. In such instances growth retardant paint should be used. Asphalt based tree paints shall not be used as they promote growth of certain rot fungi.
  - d Remove raised sucker clusters at parent limb and remove undesirable limbs that have been stubbed off and have formed accumulated sucker clusters.
  - e Directional prune so that growth will be away from wires.
  - f Lighten overhanging (within 10' of trimmed zone) or adjacent leaders and branches and shorten evergreens overhanging conductors to prevent limbs touching or breaking off and falling on lines in severe storms.
  - g Remove leaders and limbs that are a hazard to lines due to death, decay, weak configuration and split or weak crotches.
  - h Only appropriate tree tools in good working condition shall be used.
  - i Climbing irons shall not be used in any tree unless the tree is to be removed.
  - j All severed limbs and branches (hangers) shall be removed from trees after pruning.
  - k Guidelines for tree removal.
    - i Unless previous arrangement has been made with the Company Representative, trees that are a hazard to the lines shall be removed; i.e. any tree which by the nature of it's health, size or condition endangers the line.
    - ii Defective or diseased trees shall be removed whenever possible.
    - iii Fast growing and weed trees shall be removed as undesirable species, whenever possible.
    - iv Trees shall be felled away from conductors.
    - v In areas where damage might be caused to conductors or property, trees shall be stripped of all limbs with the trunk removed in sections, as necessary.
    - vi All brush shall be removed daily from public thoroughfares and other improved places unless otherwise arranged with the Company Representative.
    - vii All stumps shall be cut flush and parallel to the ground. Tree stumps shall not exceed a maximum height of three (3) inches. All brush shall be cut flush and parallel to the ground.
    - viii Wood and brush (cribbing) shall be used as a cushion to protect from potential damage due to felling trees or heavy limb sections. The probability of a bouncing effect is normally increased when using cribbing and should be allowed for.
  - l All vines shall be cleared from conductors to minimum clearance standard. Additionally vines shall be severed at base to a distance of 10' on structures to insure growth dies.
- 4 Prioritization of Pruning – Distribution pruning should be performed on a circuit basis whenever possible. Always start pruning from the substation out, as this area is of greatest importance due to the large number of customers affected by outages caused in this area.
- 5 Three-phase lines should have greater clearance and attention than single-phase spur lines. Pruning is performed to protect the largest number of customers from an interruption. Three-phase interruptions will affect more customers.

## 6 Safety – Good Relations – Clean-up

- a The contractor will take all safety and protective precautions and with respect thereto will strictly enforce all applicable regulations of Municipal, State and Federal Laws, the various insurers and the Company. These shall include OSHA and ANSI Z133.1.
- b A neat appearance, pleasant approach and a clear explanation as to what you mean or want when contacting people. In any instance where there is a misunderstanding or a possible cause for trouble with a customer or municipal official, notify the Company Representative, so that proper action can be taken. When a property owner or municipal official absolutely will not allow proper pruning refer the situation to the Company Representative in writing. If pruning in a given area is under dispute – move to another area.
- i Utility Company Relations – Tree crew to contact the Company every day and report work location; details of who to report to, when and where will be specified by the local Company Representative.
- ii Outage – Whenever there is a question of a possible accidental outage of power caused by a tree crew, the Company is to be notified immediately.
- iii Municipal Regulations – Notify the proper municipal official (Tree Warden, etc.) as required and let them know what location you are working in. Get permission to do tree work on municipal trees from the proper authority before doing the work.
- iv State Regulations – When doing tree work on a State Highway have a copy of the State Tree Pruning Permit with Permit Number. All tree work on State Highways must be approved and supervised by the proper State Official. State regulations on barricades and warning signs must be observed.

Dispose of all debris properly and leave the work area in a neat and clean condition. Unless otherwise specified, wood shall be left for property owner. All trucks will have leaf blowers to clear roadway areas.

## Contractor Responsibility

“The relationship of the Company and the Contractor is acknowledged to be that of owner and independent contractor. The means and methods employed for performing the details of pruning shall be the responsibility of the Contractor, subject to the suggestions and approvals of the Company’s designated representative.”

- 1 Compliance with Laws and Regulations – The Contractor shall comply with all applicable laws and regulations and all work and materials are to comply in every respect with all applicable codes, laws and regulations. All necessary permits, licenses, etc., for the Work unless obtained by the Company

are to be obtained and paid for by the Contractor, the Company to reimburse the Contractor for the cost thereof unless the Work is being done on a fixed fee basis.

- 2 Instructions to Contractor – Pruning work includes the furnishing of all supervision, labor, equipment, tools and services necessary to trim trees in designated areas and in a manner acceptable to local or state authorities and Company Representative, per the Pruning Contract/Purchase Order. The Contractor will report daily in writing to the Company Representative any damaged Company equipment (insulators, crossarms, etc.) encountered in the course of his work.
- 3 All crews are required to attend a yearly review of NSTAR Pruning Policy at the expense of the contractor

### **Other Related Items**

- 1 Privately Owned Facilities – The Company in general will not authorize pruning of privately owned facilities.
- 2 Contractor List – Owners of private electrical facilities may occasionally ask for recommendations concerning private contractors for line maintenance or pruning work. The Company position is not to make recommendation of any specific contractor for reasons of liability.
- 3 Refusal to Allow Pruning – When the pruning contractor reports a refusal to allow pruning, the Company Representative shall contact the involved party in an effort to secure the proper pruning. If no agreement can be reached the refusing party shall be contacted via registered mail (Return Receipt Requested)

The letter will relate our reasons for pruning i.e. protection of our facilities, reliability of service, protection of the public (tree climbers) and serve as documentation of our attempt to secure adequate pruning. Hopefully this letter will prompt some to reconsider their refusal. If not, we will have documentation of our intent and attempt to secure adequate pruning.

- 4 Documentation of Tree Removal – When, due to diseased or dead state, ornamental or large shade trees are by necessity removed, documentation in the form of detailed notes and/or photographs should be kept. This documentation may be valuable in the event a customer later brings a claim against the Company for the value of a tree claiming “wrongful removal”.

## Methods of Pruning

There are many methods of pruning trees for line clearance, but not all methods are attractive or advantageous to the tree, nor are all methods effective for long-term line clearance. The basic pruning methods are pollarding, sharing or rounding over and natural pruning (Fig. 3).

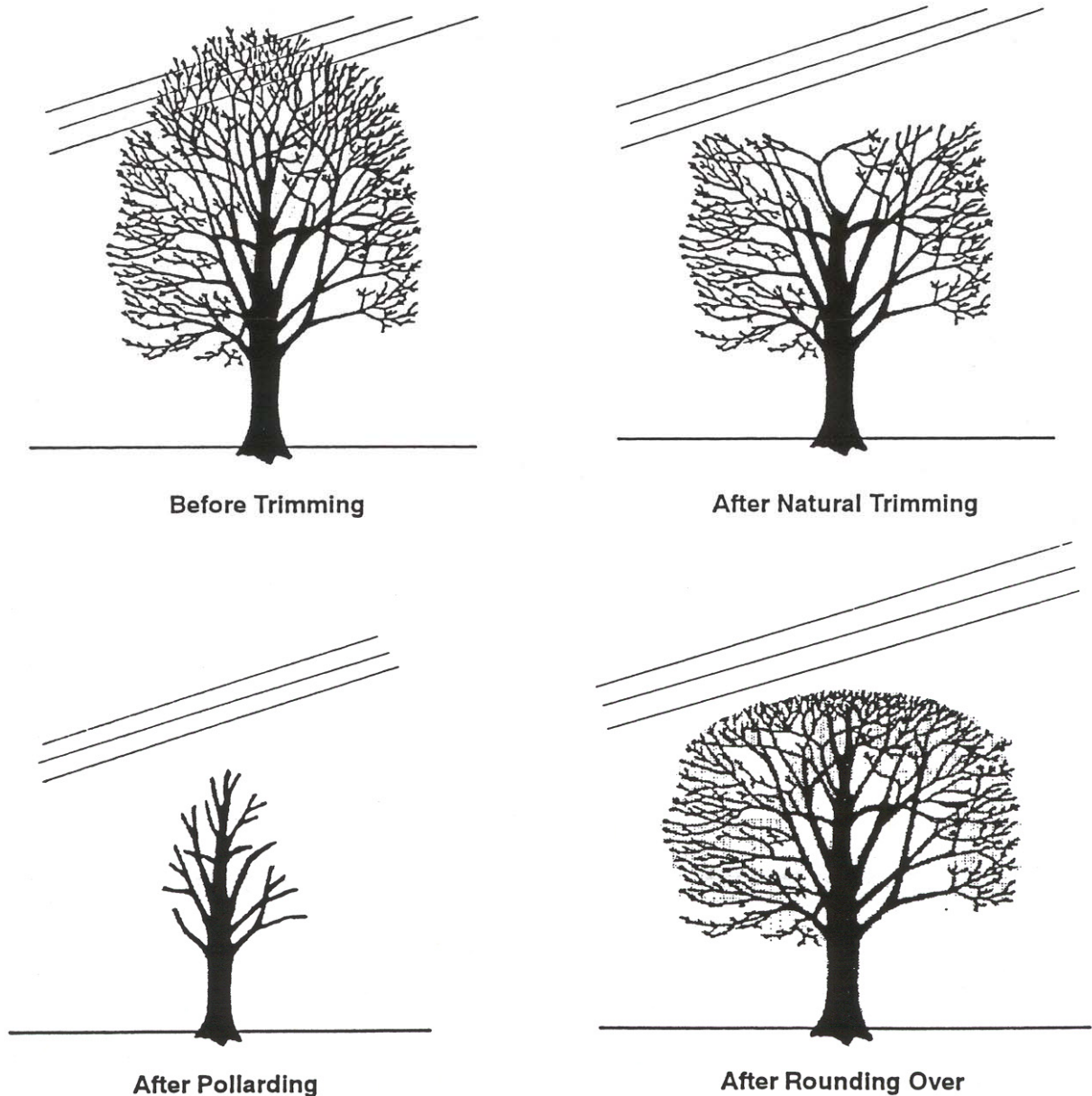


Figure 3. Basic Trimming Methods



**Stubbing off major limbs by pollarding is not a desirable pruning practice.**

The result is not only unsightly, but multitudes of fast-growing suckers sprout from the stubs and soon result in line clearance problems more serious than before. The stubs are also likely to fall victim to decay or disease. Finally, this method of pruning attracts unfavorable public attention.

**Shearing or Rounding Over** consists of making many small cuts so that the treetop is sheared in a uniform line. This results in rapid re-growth of many small sprouts, called suckers, directly toward the conductors. Because of this rapid re-growth of suckers, trees trimmed by the rounding over method need to be re-trimmed sooner than trees trimmed by the natural pruning period.

**Natural Pruning** is the method recommended by most professionals. Natural pruning is cutting branches flush at a suitable parent limb, back toward the center of the tree. This method of pruning is sometimes called “drop crutching” or “lateral pruning”. An attempt is made to remove large branches to laterals at least one-third the diameter of the branch being removed. All cuts should be flush to avoid leaving stubs. Natural pruning is especially adapted to the topping of large trees where a great deal of wood must be removed. In natural pruning, most cuts are made on larger limbs with a saw, and little pole prune work is required. The results are natural-looking trees, even if large amounts of wood have been removed. Natural pruning is also directional pruning, since it tends to guide the growth of the tree away from the wires (Figure 4). Stubbing, on the other hand, tends to promote rapid sucker growth right back into the conductors.

It should be emphasized that natural clearance is highly effective in reducing future costs, and that two or three natural pruning cycles will produce an ideal situation for both the utility and the tree owner. Most shade trees lend themselves easily to this type of pruning. Elm, Norway Maple, Red Oak, Red Maple, Sugar Maple, Silver Maple and European Linden, the most common street trees, react especially well to natural pruning methods.

**Crown Reduction** is cutting back portions of the upper crown of a tree. Reducing is indicated when a tree is located directly beneath a line. The main leader or leaders are cut back to a lateral, which should be at least one-third the diameter of the limb being removed. Most cuts should be made with a saw. A pole pruner is used only to cut lateral branches. To minimize re-growth, no more than one-fourth of the crown should be removed when topping (Figure 5).

**Side Pruning** is cutting back or removing side branches that threaten the conductors. Side pruning is required where trees are growing adjacent to utility lines. Limbs should be removed at a lateral branch. Notches in tree crowns should be avoided, if possible. Shortening branches above and below the indented area, or balancing the opposite side if the crown, will usually improve the appearance of the tree. When pruning, all dead branches over the wires must be removed, since this dead wood could easily break off and cause an interruption in service. (Figure 5)

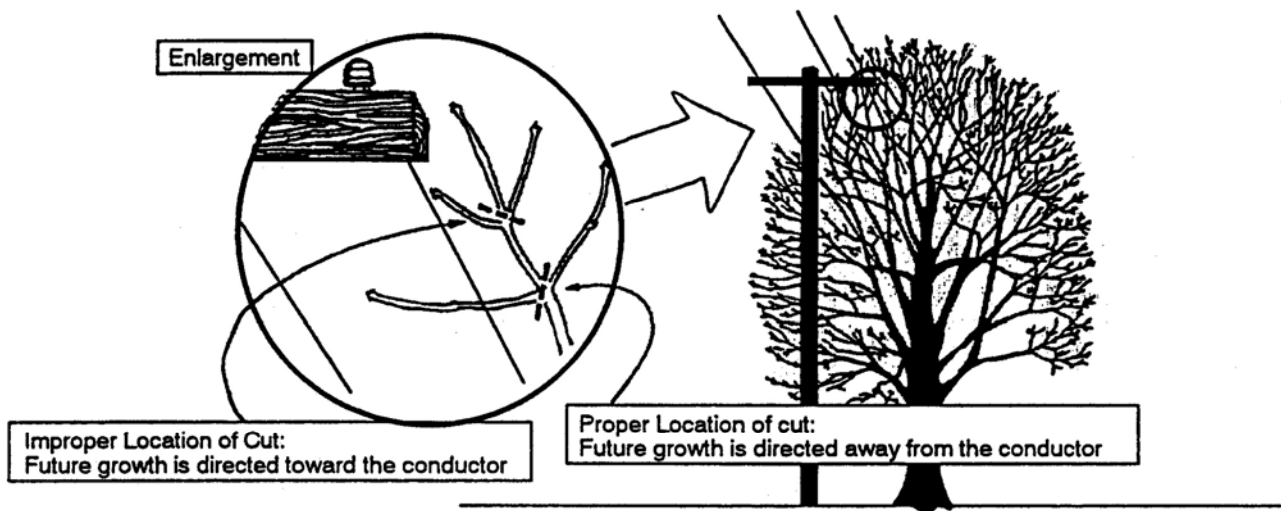


Figure 4. Natural Trimming (to direct growth away from wires)

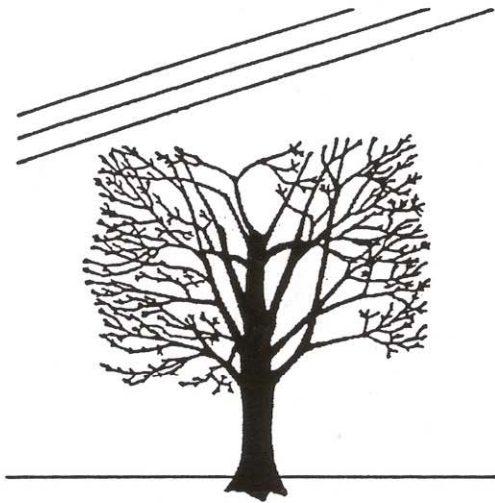
**Side Trimming** is cutting back or removing side branches that threaten the conductors. Side trimming is required where trees are growing adjacent to utility lines. Limbs should be removed at a lateral branch. Notches in tree crowns should be avoided, if possible. Shortening branches above and below the indented area, or balancing the opposite side of the crown, will usually improve the appearance of the tree. When trimming, all dead branches over the wires must be removed, since this dead wood could easily break off and cause an interruption in service (Figure 5).

**Overhang Or Under Pruning** consists of removing limbs beneath the tree crown to allow wires to pass below the tree crown. This type of pruning will allow the tree to retain its natural shape and continue its normal growth. Overhangs are hazards when lines pass beneath a tree and should be removed according to the species of the tree, location and the general policy of the utility. When pruning, all dead branches above the wires are removed, since this dead wood could easily break off and cause an interruption. Many utilities have a set removal program for trees that overhang important lines (Figure 5).

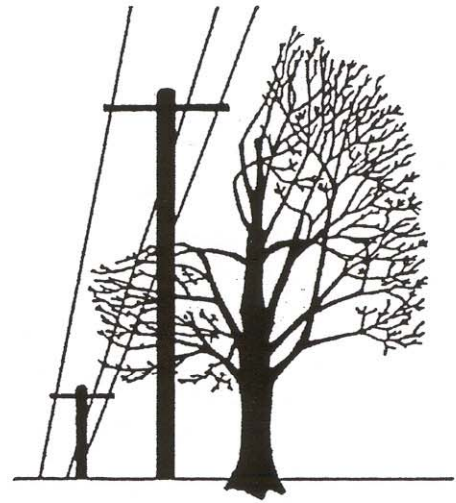
**Through Pruning** is the removal of branches within the crown to allow lines to pass through the tree. It is best suited for secondaries, streetlight circuits, and cables, although it is often used on primary circuits where there is no other way of pruning the tree. Cuts should be made at crotches to encourage growth away from the lines (Figure 5).

**Combinations** - It is often necessary to combine several types of pruning in order to maintain acceptable tree appearance and provide adequate clearances.

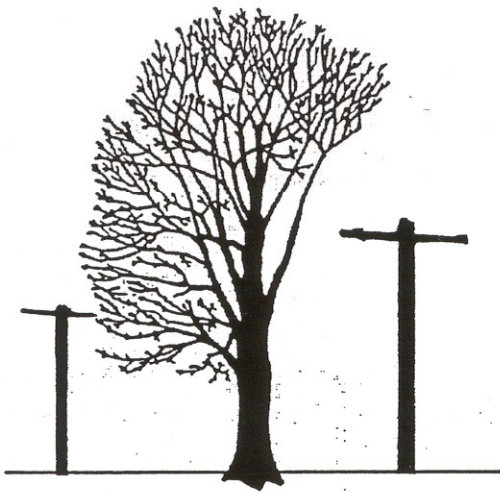
## METHODS OF TRIMMING (con't)



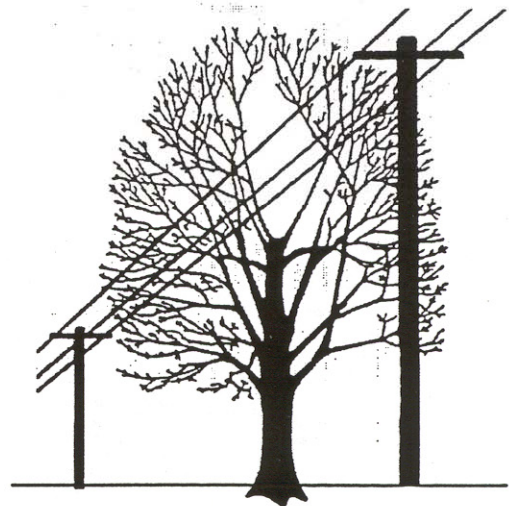
After Top Trimming



After Side Trimming



After Under Trimming



After Through Trimming

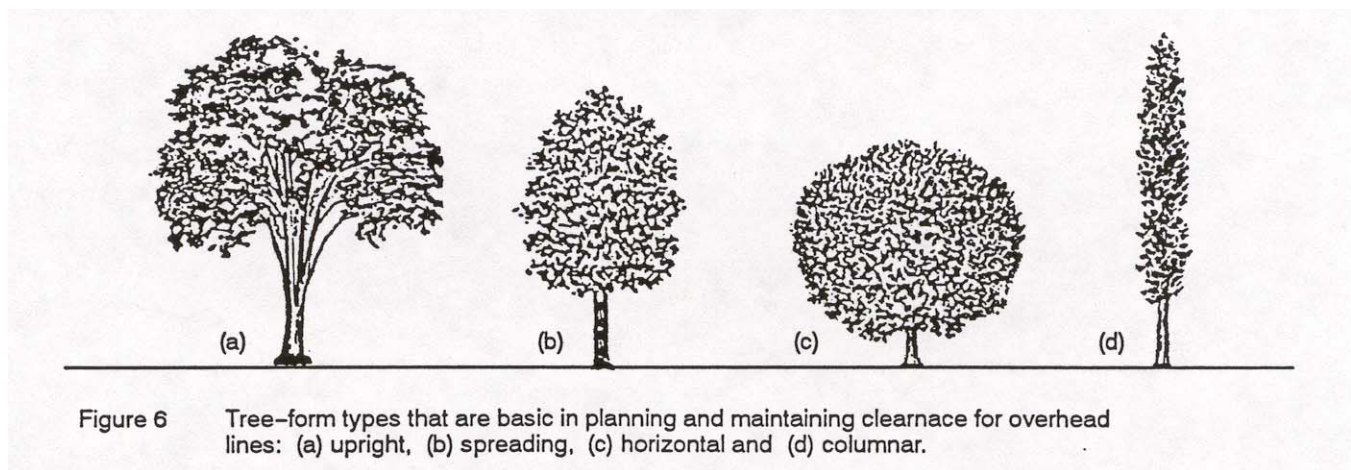
Figure 5. Four types of natural trimming.

ANSI A300 “American Standard for Tree Care Operations – Tree, Shrub and Other Woody Plant Maintenance – Standard Practices”, presents performance standards for the care and maintenance of trees and should be considered a part of this appendix and adhered to in tree operations under this policy.

## Techniques

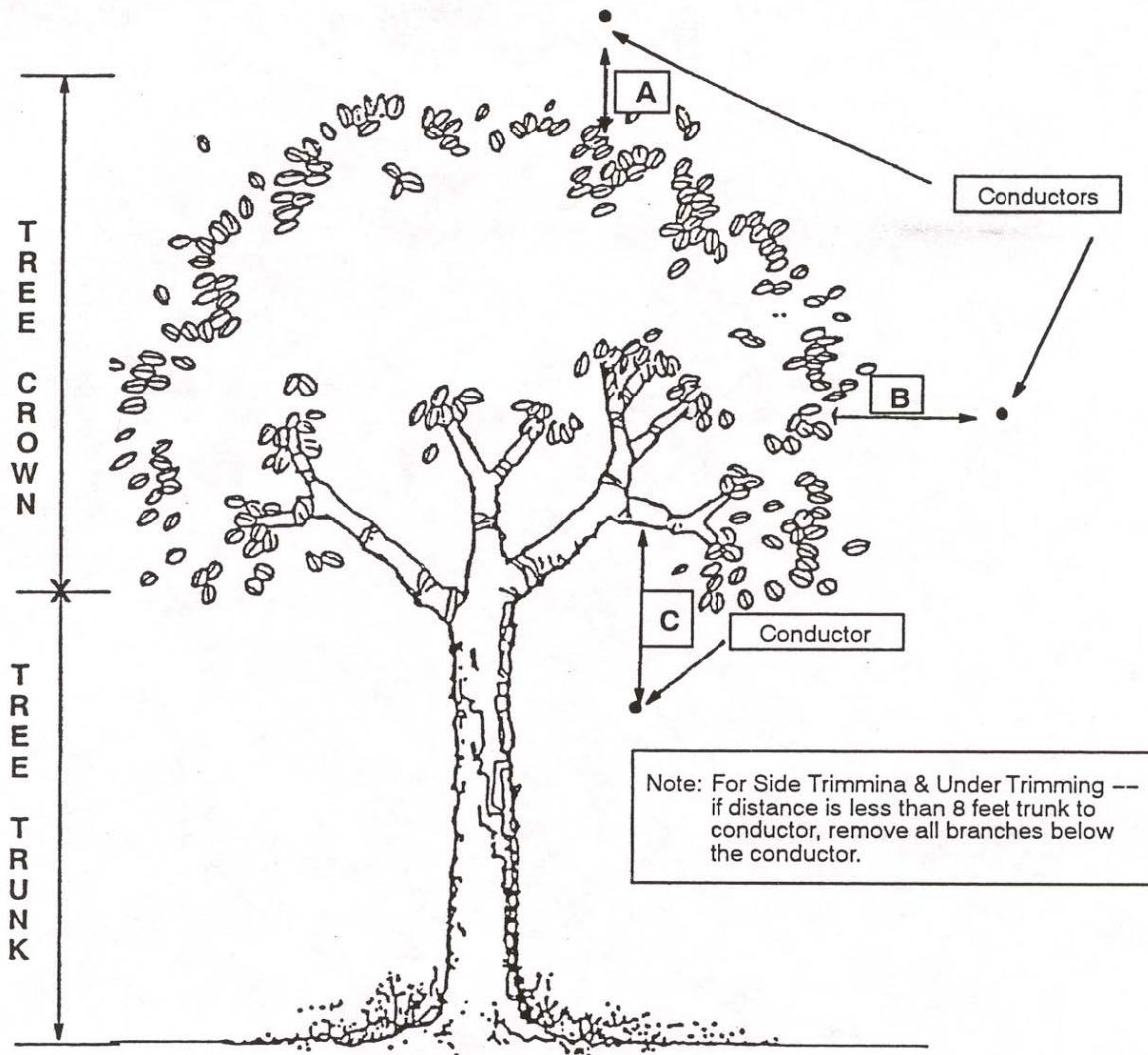
Proper clearance for any type of overhead line is measured not only in feet of clearance but in effectiveness. Both tree and overhead line characteristics must be known to get the maximum effective clearance for each tree. Clearance not only must be adequate when the tree is trimmed but must last. Therefore, each tree should be trimmed so it will need less work at the next trim cycle.

Before tree trimmers begin work, they plan how they are going to trim each tree. Consideration is given to how and when a tree is going to re-grow after it is trimmed. Trees can usually be placed into one of four tree-form types: upright, spreading, horizontal or columnar (Figure 6). If possible, the natural form of the tree should be maintained so that it does not look heavily trimmed.



All line clearance tree pruning should be done in accordance with the American National Standard Safety Requirements for Pruning, Repairing, Maintaining and Removing Trees, and for Cutting Brush” (ANSI Z133.1). The ANSI Z133 standard provides safety criteria for line clearance tree trimmers and the public. Minimum working distances from energized conductors are listed and must always be observed.

# EXHIBIT 1



Note: Our objective is to obtain trim clearances as indicated. However, extenuating circumstances may dictate that lesser clearances be accepted.

CLEARANCE	TYPE OF TRIMMING	MINIMUM CLEARANCE FOR 25 KV OR BELOW *
"A"	Topping	8 Feet
"B"	Side Trimming	8 Feet
"C"	Under Trimming (Remove overhang situations where possible)	12 Feet **

\* Services should be trimmed only to avoid contact.

\*\* Thin, lighten, or shorten limbs above this point on pines to prevent snow loading.

**Secondary electric lines shall be cleared for a minimum clearance of three feet.**

# Cambridge Electric Light Company

## Capital Expenditures

Year Ending December 31, 2004



Appendix 8



**Cambridge Electric Light Company**  
**2004 ASQR Capital Spending**  
**(Dollars in Thousands)**

Category	Auth	Description	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
<b>Distribution Operations:</b>												
		Purchase and Install Customer Meters	\$ 108	\$ 89	\$ 130	\$ 107	\$ 193	\$ 158	\$ 65	\$ 73	\$ 1,061	\$ 182
<b>Distribution Electric Delivery:</b>												
D		New/Replace/Upgrade Customer Substations	\$ 29	\$ 100	\$ 756	\$ 960	\$ 322	\$ 686	\$ 196	\$ -	\$ -	\$ -
D		Overhead Distribution Equipment	651	442	372	809	854	308	123	-	-	-
D		Underground Distribution Equipment	1,275	2,013	2,234	3,027	2,157	(8)	-	-	-	-
D		Overhead Services	90	75	87	60	66	93	1	-	-	-
D		Underground Services	108	91	109	147	152	-	-	-	-	-
D		System Failures/Replacements	-	-	-	-	-	-	-	610	-	-
D		Purchase and Install Transformers	159	152	147	193	248	171	-	-	-	-
D		Minor Projects	-	257	(1)	-	9	-	-	-	-	-
D		Upgrade/Replace Substation Equipment	73	39	11	10	17	75	48	-	-	-
D		13.8Kv Service to Harvard University Switch	199	-	-	-	-	-	-	-	-	-
D		14 Elliott Street	94	-	-	-	-	-	-	-	-	-
D		22 Spring Street	35	-	-	-	-	-	-	-	-	-
D	01190	301 Binney Street, Cambridge	-	-	-	-	-	-	-	-	176	1
D		600 Memorial Dr - Upgrade	60	-	-	-	-	-	-	-	-	-
D		Alewife Station Dig Fault Recorder	53	-	-	-	-	-	-	-	-	-
D	99545	Alewife Station Relay System Upgrade	-	-	-	-	248	11	-	-	-	-
D		Aluminum Streetlight Replacement	59	-	-	-	-	-	-	-	-	-
D		Amtrak Tower "A"	53	-	-	-	-	-	-	-	-	-
D		Amtrak West Cambridge	130	-	-	-	-	-	-	-	-	-
D		A.O. Wilson - 40 Smith Place	177	-	-	-	-	-	-	-	-	-
D	04973	Biogen 1 Cambridge Center Cambridge - Street	-	-	-	-	-	-	-	-	-	4
D	04738	Brickworks 310 Rindge Ave, Cambridge Station	-	-	-	-	-	-	-	-	-	327
D		Brookline Place Housing	166	-	-	-	-	-	-	-	-	-
D		Brookline Street Underground	134	-	-	-	-	-	-	-	-	-
D	99541	Cable Extension - Forest Cities	-	-	-	-	240	8	-	-	-	-
D	99542	Cable Extension - Harvard Square	-	-	-	-	677	75	-	-	-	-
D	99543	Cable Extension - Smith Place	-	-	-	-	193	6	-	-	-	-
D		Cable Relay Upgrade	-	-	109	-	-	-	-	-	-	-
D		Cadbury Commons	48	-	-	-	-	-	-	-	-	-
D		Circuit New/Extension	-	-	-	319	-	-	-	-	-	-
D		Circuit Upgrades	-	-	-	-	-	-	-	-	72	-
D		City Hall Network System	41	-	-	-	-	-	-	-	-	-
D		Conservation Voltage Reduction	60	-	-	-	-	-	-	-	-	-
D	04546	Distribution Automation Project for Cambridge	-	-	-	-	-	-	-	-	-	32
D		Harvard Business School Relaying	41	-	-	-	-	-	-	-	-	-
D	03357	Hazeltine	-	-	-	-	-	-	-	-	-	277
D	04239	Increase Tie Capacity to 13-02	-	-	-	-	-	-	-	-	-	280
D		Install Network Communication System	-	-	-	-	-	-	-	-	260	-
D	04364	Install Nitrogen Generators on Transformers Station 828	-	-	-	-	-	-	-	-	-	8
D	04365	Install Nitrogen Generators on Transformers Station 831	-	-	-	-	-	-	-	-	-	8
D	04866	Kendall 2004 Mitigation plan - Dist Station	-	-	-	-	-	-	-	-	-	68
D	04867	Kendall 2004 Mitigation plan - Dist Line	-	-	-	-	-	-	-	-	-	330
D	99520	Kendall Repower System	-	-	-	-	-	-	-	-	-	(15)
D	02421	Line Extension to Station 838	-	-	-	-	-	-	-	-	28	-
D		Mass Ave - Extend Conduit Service	90	-	-	-	-	-	-	-	-	-
D		Mass Ave - North Cambridge MBTA	8	-	-	-	-	-	-	-	-	-
D		Mass Ave Sewer Project	-	-	-	-	-	-	-	-	(169)	-
D		MIT Co-generation	64	-	-	-	-	-	-	-	-	-
D		MIT Interconnection Charges	164	-	-	-	-	-	-	-	-	-
D	99997	Minor Projects	-	-	-	-	-	370	-	-	-	-
D		New Agassiz School	76	-	-	-	-	-	-	-	-	-
D	03311	New Customer Connect	-	-	-	-	-	-	-	-	57	-
D	03312	New Customer Connect - 12 Emily Street - MIT	-	-	-	-	-	-	-	-	38	-
D	03313	New Customer Connect 205 Alewife-Brook Pkwy	-	-	-	-	-	-	-	-	12	0

**Cambridge Electric Light Company**  
**2004 ASQR Capital Spending**  
**(Dollars in Thousands)**

Category	Auth	Description	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
D	03314	New Customer Connect - 21 Erie Street - LYME Properties	-	-	-	-	-	-	-	-	146	(63)
D	01140	OSHA Compliance Project	-	-	-	-	-	-	-	123	-	-
D		Putnam Bulk Sub	12	-	-	-	-	-	-	-	-	-
D	04243	Reconductor underground section of 1-21-P102										27
D	04755	Rewind Transformer Station 817 - Putnam										89
D	04240	Relieve Circuit AB-11										162
D	04241	Relieve Circuit 13-21										111
D	03146	Relieve Circuit 13-38	-	-	-	-	-	-	-	-	203	0
D	03154	Relieve Circuit 13-98	-	-	-	-	-	-	-	-	101	-
D	99546	Repair Putnam Transformer	-	-	-	-	494	646	(788)	-	-	-
D		Remote Thermal Unit Replacements	130	170	49	3	8	-	-	-	-	-
D	99544	Separation of Facilities @ Kendall	-	-	-	-	131	21	-	-	-	-
D	00500	Technology Square, Cambridge	-	-	-	-	-	103	-	-	(2)	-
D		Tie Line Fiberoptic Cable	182	111	5	-	-	-	-	-	-	-
D	99547	Y2K Substation Preparation	-	-	-	-	151	71	-	-	-	-
D	99595	Preliminary Engineering - Distribution Streets	-	-	-	-	-	-	-	-	20	10
D	99596	Preliminary Engineering - Distribution Station	-	-	-	-	-	-	-	-	46	96
D	99600	Preliminary Survey	-	-	-	-	-	5	(3)	-	-	-
D	99608	Replace Overhead Equipment in Kind	-	-	-	-	-	-	-	-	318	32
D	99609	Like For Like Replacements	-	-	-	-	-	640	369	932	397	397
D	99610	Minor System Improvements	-	-	-	-	-	127	27	171	33	83
D	99607	Minor System Improvements - Stations	-	-	-	-	-	-	-	89	486	426
D	99611	Minor Capital Improvements	-	-	-	-	-	313	(11)	-	36	(2)
D	99616	Underground Acts of Public Authority	-	-	-	-	-	247	104	-	94	4
D	99625	New Customer Connections Cambridge Electric	-	-	-	-	-	463	2,051	2,612	848	354
D	99701	Residential Customer Cambridge	-	-	-	-	-	3	4	24	-	(1)
D	99702	Street Lighting Cambridge	-	-	-	-	-	0	1	27	17	15
D	99721	New Customer Connections - Mass Ave	-	-	-	-	-	0	8	-	-	-
D	99780	Street Light Engineering Cambridge - Corner Mass Ave Green St	-	-	-	-	-	1	-	-	-	-
D	99999	Overhead Work Order and New Customer	-	-	-	-	-	423	-	-	-	-
D	99999	Engineering Specific -Putnam, Kendall, Alewife, Blackstone Station	-	-	-	-	-	-	407	-	-	-
D	NOAUT	Minor Projects	-	-	-	-	-	-	89	-	-	-
D	01178	Internet Hotel - 320 Bent Street	-	-	-	-	-	-	95	18	18	-
D	99075	Walkdown Repairs Circuits 320-H6 and 450-H7	-	-	-	-	-	-	1	-	-	-
D	99230	Underground Replacement - Proctor St @ Mass Ave	-	-	-	-	-	-	1	-	-	-
D	99253	Circuit Upgrade - Walkdown Repairs	-	-	-	-	-	-	1	-	-	-
D	99385	Improve Overhead Switch	-	-	-	-	-	-	20	-	-	-
D	99386	4 KV Oil Switch Replacement	-	-	-	-	-	-	27	-	-	-
D	99627	System Engineering Cambridge	-	-	-	-	-	-	22	-	474	1,311
D	99629	New Commercial Customer - Cambridge	-	-	-	-	-	-	3	10	-	(8)
D	99703	Keep Cost Cambridge	-	-	-	-	-	-	53	37	(27)	(12)
D	99704	Overhead Keep Cost Knock Down of Poles	-	-	-	-	-	-	7	(5)	52	(3)
D	99731	New Customer Connections	-	-	-	-	-	-	1	-	-	-
D	99741	New Customer Connections	-	-	-	-	-	-	6	-	-	-
D	99793	Act of Public Authority	-	-	-	-	-	-	1	283	-	-
D	99903	Maintenance Line of Business	-	-	-	-	-	-	4	354	-	(2)
D		Lyme Properties - 320 Bent St/Binney St	-	-	-	-	-	-	(60)	-	-	-
D		Overhead Corrective Replacement - Cambridge - Various	-	-	-	-	-	-	3	-	-	-
D		Overhead Work Order - Cambridge	-	-	-	-	-	-	16	-	-	-
D		Minor Projects - Cambridge - Various Areas	-	-	-	-	-	-	16	-	-	-
D		Underground Projects - Cambridge - Various Areas	-	-	-	-	-	-	103	-	-	-
D		Minor Projects - Cambridge - Various Areas	-	-	-	-	-	-	85	-	-	-
D	99614	Act of Public Authority - Cambridge - Various	-	-	-	-	-	-	158	-	-	973
D		New Customer - 1230 Mass Ave Harvard St	-	-	-	-	-	-	164	-	-	-
D		New Customer - Cambridge Various	-	-	-	-	-	-	277	-	-	-
D		Overhead Work Order - Cambridge	-	-	-	-	-	-	33	-	-	-
D		Remove Service - Cambridge	-	-	-	-	-	-	7	-	-	-
D		Keep Cost Underground/Private Lighting - Cambridge	-	-	-	-	-	-	(7)	-	-	-
D		Keep Cost Underground - Cambridge	-	-	-	-	-	-	1	-	-	-



**Cambridge Electric Light Company**  
**2004 ASQR Capital Spending**  
**(Dollars in Thousands)**

Category	Auth	Description	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
D		Construction Accounting Services	-	-	-	-	-	39	-	-	-	-
		<b>Total Distribution Electric Delivery</b>	<b>\$ 4,461</b>	<b>\$ 3,450</b>	<b>\$ 3,878</b>	<b>\$ 5,528</b>	<b>\$ 5,967</b>	<b>\$ 4,897</b>	<b>\$ 3,664</b>	<b>\$ 5,285</b>	<b>\$ 3,735</b>	<b>\$ 5,319</b>
<b>Transmission:</b>												
T		Alewife Station - Dig Fault Recorder	\$ -	\$ 51	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
T		Instrument Upgrade	-	-	-	-	-	12	-	-	-	-
T		Putnam Station - High Pressure Oil Filler Relay	-	-	84	-	-	-	-	-	-	-
T		Cable Relaying	-	-	-	22	-	-	-	-	-	-
T	99140	Interconnection Agreement										\$2,924
T	99605	Replacement Station Replacement in Kind										22
T		Station 800 Kendall	-	-	-	-	-	-	127	-	-	-
T	03285	Kendall Distribution Sub (Substation)	-	-	-	-	-	-	-	-	359	4,052
T	03286	Kendall Distribution Sub (Transmission)	-	-	-	-	-	-	-	-	1,521	1,076
T	03289	Kendall Distribution Sub (Transmission Line Work)	-	-	-	-	-	-	-	-	1,754	630
T	01621	Cambridge Electric - Mirant (Interconnection)										6,625
		<b>Total Transmission</b>	<b>\$ -</b>	<b>\$ 51</b>	<b>\$ 84</b>	<b>\$ 22</b>	<b>\$ -</b>	<b>\$ 12</b>	<b>\$ 127</b>	<b>\$ -</b>	<b>\$ 3,633</b>	<b>\$ 15,330</b>
<b>Capitalized Overheads:</b>												
			\$ -	\$ -	\$ -	\$ -	\$ -	\$ 978	\$ 1,169	\$ 1,037	\$ 1,218	\$ 2,464
<b>Total Capital Spending *</b>			<b>\$ 4,569</b>	<b>\$ 3,590</b>	<b>\$ 4,092</b>	<b>\$ 5,657</b>	<b>\$ 6,160</b>	<b>\$ 6,045</b>	<b>\$ 5,025</b>	<b>\$ 6,395</b>	<b>\$ 9,647</b>	<b>\$ 23,295</b>
<b>Note:</b>												
<b>* Total Capital Spending for years 1994 through 1999 include both Direct Charges and Indirect Charges by project.</b>												
	1994	2,123										
	1995	1,985										
	1996	1,895										
	1997	1,731										
	1998	2,041										
	1999	2,079										

# **Cambridge Electric Light Company**

## **Spare Component Acquisition & Inventory Policy and Practice**

Year Ending December 31, 2004



Appendix 9

## **Cambridge Electric Light Company Spare Parts Policy and Practices**

Cambridge Electric Light Company (“Cambridge” or the “Company”) monitors and manages critical items for its electric transmission system using a state-of-the-art computerized and integrated work management and inventory-control/procurement system. This system was installed in 1999-2000, and provides for identification of common items needed for Cambridge, as well as the operating systems of all of the NSTAR Companies (i.e., Cambridge, Commonwealth Electric Company, Boston Edison Company and NSTAR Gas Company) (together the “NSTAR Companies”). In addition, Cambridge’s system inventories have been decentralized to bring materials closer to their point of use, decreasing spare-part requirements. Spare part requirements are periodically reviewed and updated by the Company to create efficiencies among and between the NSTAR Companies.

### ***I. Electric Distribution System Spare Parts***

The components of Cambridge’s distribution system are, for the most part, lower-cost and high-use items. Inventory levels are based on predicted numbers of: (1) replacements due to failure; (2) replacements due to wear, tear and obsolescence; and (3) new construction needs. Higher-cost, less-frequent turnover items, such as pad-mount switches, transformers, tapping and stopping equipment and regulators, are inventoried based on the same requirements.

In recent years, The NSTAR Companies have formed alliances with vendors of high-use items such as gas parts, distribution transformers, cable and overhead hardware. These alliances have proven very effective in assuring a continuous flow of high-quality components at a controlled price, as well as giving the NSTAR Companies priority treatment for emergency deliveries to cover natural disasters, which have the potential to drastically impact the system. In 2003 NSTAR reevaluated their cable alliance, distribution transformer alliance and poleline hardware alliance securing service commitments and stable pricing for the next 2-3 years. Wood Poles are being evaluated in 2005.

### ***II. Electric Transmission and Distribution Substation & Gas Take Station Spare Parts***

Components at the substation level are much higher in cost, but much lower in number. The turnover of these components and the parts associated with them is also very low. Historically, there was a substantial inventory of substation spare parts, with very high carrying costs. Based on alternative methods for obtaining replacement parts, spare parts inventories were reviewed by Cambridge, and as a result, substantially reduced.

Cambridge has identified the following alternatives to maintaining a substantial inventory of spare parts:

- Establishing relationships with suppliers who maintain inventories of spare parts that can be obtained by Cambridge on very short notice, as described above.
- Utilizing equipment on the Cambridge system, which has been recently replaced or upgraded, for use as spare parts. Because of the large number of Cambridge's ongoing projects, this option would provide a fairly continuous supply of spare parts.
- Maintaining relationships with utilities that utilize similar equipment.
- Employing the use of rebuilding kits.
- Promoting redundancy in design and parallel feeds throughout the Cambridge system to reduce the need for major component inventories.

For large critical components, dedicated spares are kept and replaced as used by Cambridge. Specifically, the Company maintains a mobile transformer and mobile substations that can be placed in service in a very short time for emergency replacement of a major component.

# Cambridge Electric Light Company

## Poor Performing Circuits

Year Ending December 31, 2004



Appendix 10

## 2004 – Poor Performing Circuits

Cambridge Electric Light Company					
Circuit ID	Location	Reason(s) for performance	Number of years performed poorly	Steps taken to improve performance	2004 SAIDI
811-37	Cambridge	There was only one incident on this circuit and it was a supply problem	2	This circuit is scheduled for tree trimming and an infrared survey in 2005	214.20
817-46	Cambridge	Tree, cable and animal were the main cause of outage on the circuit.	2	This circuit is schedule for a circuit walk down in 2005 along with an infrared survey.	188.16
812-37	Cambridge	The main drive of outage was an animal problem and a joint failure.	2	The OH section is scheduled for tree trimming in 2005 along with an infrared survey.	170.43
814-12	Cambridge	The two incidents on the circuit were cable failures.	2	This circuit is scheduled for an infrared survey in 2005.	124.48

# Cambridge Electric Light Company

## Staffing Levels

Year Ending December 31, 2004



Appendix 11

1997 THROUGH 2004

STAFFING - TRANSMISSION AND DISTRIBUTION OPERATIONS

	1997	1998	1999	2000	2001	2002	2003	2004
Cambridge Electric Light Company								
Union	104	112	73					
Management	38	36	29					
NSTAR Electric & Gas								
Union				2,264	2,272	2,324	2,232	2,128
Management				919	914	889	855	847

Note 1: From 1998 to 1999 and 1999 to 2000 the Company offered a voluntary separation program offered as part of the merger with Commonwealth Energy System. During the period from August 1999 through August 2000, 635 employees from the Boston Edison and Commonwealth Energy System elected to participate in this program and exited the merged company. This was a program that was negotiated with the union leadership. Under the program, approximately 300 union and 335 management employees terminated their employment.

Note 2: With the merger of BEC Energy and Commonwealth Energy System into NSTAR Electric and Gas and resulting consolidation of operations, employees are no longer catagorized by or assigned to positions on the basis of the pre-merger operating company designations.



# **Cambridge Electric Light Company**

**2005**

## **Performance Benchmarks**



Appendix 12

Cambridge Electric Light Company  
2005  
Performance Benchmarks

<u>Year</u>	<u>Percent Calls Answered (1)</u>	<u>Percent Service Appt. Met</u>	<u>Percent On-Cycle Meter Reads</u>	<u>Lost Work Day Accidents</u>	<u>SAIDI (2)</u>	<u>SAIFI (2)</u>	<u>Consumer Division Cases</u>	<u>Billing Adjustments</u>
1992				2.17			0.347	0.00
1993				3.58			0.159	2.09
1994				3.84			0.212	0.00
1995				2.81			0.133	21.79
1996				3.24			0.320	11.04
1997	66.17%		99.00%	2.35	62.33	0.540	0.158	23.47
1998	64.26%		97.69%	1.43	66.20	0.712	0.207	1.70
1999	61.55%		98.64%	2.89	40.72	0.815	0.569	3.41
2000	71.16%		98.87%	2.49	37.17	0.498	0.176	11.17
2001	60.26%		98.64%	1.54	37.26	0.659	0.126	0.00
2002	80.24%	100.00%	98.09%					
2003	80.28%	83.06%	98.29%					
2004	78.55%	78.79%	98.28%					
Mean	70.31%	87.28%	98.44%	2.63	48.74	0.645	0.241	7.47
Std. Dev.	8.44%	11.22%	0.43%	0.80	14.31	0.129	0.137	9.03
Max. Penalty	53.44%	64.85%	97.57%	4.24	77.36	0.902	0.515	25.52
25% Penalty	61.87%	76.07%	98.00%	3.44	63.05	0.773	0.378	16.50
25% Offset	78.74%	98.50%	98.87%	1.83	34.42	0.516	0.103	-1.56
Max. Offset	87.18%	109.72%	99.30%	1.03	20.11	0.387	-0.034	-10.59

Notes (1) Based on 30 second threshold; includes calls abandoned after threshold;

(2) Exclusions based on events affecting 15% of Company.